information systems

Volume Contents and Author Index
Volume 17, 1992

PERGAMON PRESS
OXFORD NEW YORK SEOUL TOKYO

Editors

Editor-in-Chief

Hans-Jochen Schneider
Unwelt- und Entsorgungs GmbH & Co KG
Frühlingshalde 19
7000 Stuttgart 1, Germany

Assistant to the Editor-in-Chief

Gert Scheuernstuhl
Haessler Software GmbH
P.O. Box 50
D-7542 Schoemberg, Germany

Regional Editors

Yu. Drobyshev
NPO "Gorsystemotechnika"
Krasnoarmeiskaya st., 23-B
252004 Kiev-4, Ukraine

G. M. Nijssen
Nijssen Adviesbureau
voor Informatica
Beutenakerweg 36
NL-6278 NB Beutenaken
The Netherlands

Gerard Salton
Department of Computer Science
Cornell University
Ithaca, NY 14853, U.S.A.

Publishing Office

Pergamon Press Ltd, Pergamon House, Bampfylde Street, Exeter EX1 2AH, England [*Tel.* Exeter (0392) 51558; *Fax* (0392) 425370].

Subscription and Advertising Offices

North America: Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.
Rest of the World: Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, U.K.

Subscription Rates

Annual institutional subscription rate (1993): £381.00 (US$724.00). Sterling prices are definitive. U.S. dollar prices are quoted for convenience only, and are subject to exchange rate fluctuation. Prices include postage and insurance and are subject to change without notice.

Back Issues

Back issues of all previously published volumes, in both hard copy and on microform are available direct from Pergamon Press offices.

Published 6 issues/annum in January, March, May, July, September and November

Copyright © 1992 Pergamon Press Ltd

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organizations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the copyright holder.

Photocopying information for users in the U.S.A. The Item-fee Code for this publication indicates that authorization to photocopy items for internal or personal use is granted by the copyright holder for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service provided the stated fee for copying, beyond that permitted by Section 107 or 108 of the United States Copyright Law, is paid. The appropriate remittance of $5.00 per copy per article is paid directly to the Copyright Clearance Center Inc., 27 Congress Street, Salem, MA 01970, U.S.A.

Permission for other use. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying.

The Item-fee Code for this publication is: 0306-4379/92 $5.00 + 0.00

Application to mail at second class postage rate is pending at RAHWAY, NJ. Postmaster send address corrections to *Information Systems*, c/o Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.

♾™ The text paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

Volume Contents

NUMBER 1

Ojelanki K. Ngwenyama and **Noel Bryson** — 1 — A formal method for analyzing and integrating the rule-sets of multiple experts

N. Leone and **P. Rullo** — 17 — Safe computation of the well-founded semantics of Datalog queries

Kenneth Baclawski and **Dan A. Simovici** — 33 — An algebraic approach to databases with complex objects

Timo Niemi and **Kalervo Järvelin** — 49 — Operation-oriented query language approach for recursive queries—Part 1. Functional definition

Timo Niemi and **Kalervo Järvelin** — 77 — Operation-oriented query language approach for recursive queries—Part 2. Prototype implementation and its integration with relational databases

Short Note

Evan P. Harris, Alan J. Kent and **Ron Sacks-Davis** — 107 — An environment for building graphical user interfaces for nested relational databases

NUMBER 2

Alfons Kemper and **Guido Moerkotte** — 117 — Access support relations: an indexing method for object bases

Nikolaus Ott — 147 — Aspects of the automatic generation of SQL statements in a Natural Language Query Interface

Maria Spiliopoulou and **Michalis Hatzopoulos** — 161 — Translation of SQL queries into a graph structure: query transformations and pre-optimization issues in a pipeline multiprocessor environment

Yungho Leu, Ahmed K. Elmagarmid and **Noureddine Boudriga** — 171 — Specification and execution of transactions for advanced database applications

Yanchun Zhang and **Maria E. Orlowska** — 185 — A new polynomial time algorithm for BCNF relational database design

NUMBER 3

Jaume Sistac — 195 — The DADES/GP approach to automatic generation of Information System prototypes from a deductive conceptual model

Uwe Hohenstein and **Gregor Engels** 209 SQL/EER—syntax and semantics of an Entity-Relationship-based query language

Chin-Chen Chang, Ren-Junn Hwang and **Tzong-Chen Wu** 243 Cryptographic key assignment scheme for access control in a hierarchy

John F. Roddick and **Jon D. Patrick** 249 Temporal semantics in information systems—a survey

Joobin Choobineh and **Santosh S. Venkatraman** 269 A methodology and tool for derivation of functional dependencies from business forms

I News Section

NUMBER 4

W. John Wilbur 283 An information measure of retrieval performance

Jiawei Han and **Kangsheng Zeng** 299 Automatic generation of compiled forms for linear recursions

C. H. Lin, C. C. Chang and **R. C. T. Lee** 323 A conference key broadcasting system using sealed locks

Pai-Cheng Chu 329 A transaction-oriented approach to attribute partitioning

Short Note
Harm van der Lek 343 Note on the structure of joins

I News Section

NUMBER 5

Nikos A. Lorentzos 347 DBMS support for time and totally ordered compound data types

Murlidhar Koushik and **George Diehr** 359 Linear-density hashing with dynamic overflow sharing

C. Y. Chen and **C. C. Chang** 381 On GDM allocation method for partial range queries

Takao Miura 395 A logical framework for deductive objects

Robert Kabler, Yannis E. Ioannidis and **Michael J. Carey** 415 Performance evaluation of algorithms for transitive closure

I News Section

NUMBER 6

James Geller, Yehoshua Perl, Erich Neuhold and **Amit Sheth**	443	Structural schema integration with full and partial correspondence using the Dual Model
Xian-He Sun and **Nabil Kamel**	465	Preprocessing predicates and queries
Rajiv Tewari and **Nabil R. Adam**	477	Using semantic knowledge of transactions to improve recovery and availability of replicated data
Yannis Manolopoulos and **Stavros Christodoulakis**	491	File organizations with shared overflow blocks for variable length objects
Short Note		
Paolo Ciaccia and **Dario Maio**	511	On the complexity of finding bounds for projection cardinalities in relational databases

Author Index

Adam N. R., 477

Baclawski K., 33
Boudriga N., 171
Bryson N., 1

Carey M. J., 415
Chang C. C., 243, 323, 381
Chen C. Y., 381
Choobineh J., 269
Christodoulakis S., 491
Chu P.-C., 329
Ciaccia P., 511

Diehr G., 359

Elmagarmid A. K., 171
Engels G., 209

Geller J., 443

Han J., 299
Harris E. P., 107
Hatzopoulos M., 161
Hohenstein U., 209
Hwang R.-J., 243

Ioannidis Y. E., 415

Järvelin K., 49, 77

Kabler R., 415
Kamel N., 465
Kemper A., 117
Kent A. J., 107
Koushik M., 359

van der Lek H., 343
Lee R. C. T., 323
Leone N., 17
Leu Y., 171
Lin C. H., 323
Lorentzos N. A., 347

Maio D., 511
Manolopoulos Y., 491
Miura T., 395
Moerkotte G., 117

Neuhold E., 443
Ngwenyama O. K., 1
Niemi T., 49, 77

Orlowska M. E., 185
Ott N., 147

Patrick J. D., 249
Perl Y., 443

Roddick J. F., 249
Rullo P., 17

Sacks-Davis R., 107
Sheth A., 443
Simovici D. A., 33
Sistac J., 195
Spiliopoulou M., 161
Sun X.-H., 465

Tewari R., 477

Venkatraman S. S., 269

Wilbur W. J., 283
Wu T.-C., 243

Zeng K., 299
Zhang Y., 185

Typeset in Great Britain by BPCC Techset Ltd, Exeter. Printed by BPCC Wheatons Ltd, Exeter